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**Engineering Statement
Minor Modification Application for K46KG-D
Channel 46 at Portland, OR
September 2009**

This Engineering Statement has been prepared on behalf of Rural Oregon Wireless Television, licensee of digital TV translator station K46KG-D. This material has been prepared in connection with a minor modification application.

I. Allocation Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any facilities with which contour overlap exists. This study was performed using the SunDTV program from V-Soft Communications and a 1 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. Based on the foregoing allocation and interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Summary Study

Census data selected: 2000

Post DTV Transition Database Selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 09-18-2009 Time: 12:50:41

Record Selected for Analysis

K46KG-D USERRECORD-01 MADRAS & CULVER OR US
 Channel 46 ERP 15. kW HAAT 511. m RCAMSL 00600 m STRINGENT MASK
 Latitude 045-31-21 Longitude 0122-44-45
 Status APP Zone 2 Border
 Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 0.
 Last update Cutoff date Docket
 Comments
 Applicant

Cell Size for Service Analysis 1.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Not full service station

Facility meets maximum power limit

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50,90) (km)
0.0	15.000	528.2	65.2
45.0	15.000	549.9	65.8
90.0	15.000	525.4	65.1
135.0	15.000	489.7	64.1
180.0	15.000	517.2	64.9
225.0	15.000	496.7	64.3
270.0	15.000	534.2	65.3
315.0	15.000	443.1	62.5

Contour Overlap to Proposed Station

Station
 KUNP-LP 47 PORTLAND OR BLTTL20060809ABC

Station inside contour of Digital LPTV station
 K46KG-D 46 MADRAS & CULVER OR USERRECORD01

Contour Overlap Evaluation to Proposed Station Complete

LANDMOBILE SPACING VIOLATIONS FOUND

NONE

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance
Distance to border = 305.9km

Proposed facility is beyond the Mexican coordination distance

Proposed station is 1.33km from AM station
PORTLAND OR KUPL Status: L Antenna: DAN

Start of Interference Analysis

Proposed Station
Channel Call City/State ARN
46 K46KG-D MADRAS & CULVER OR USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
45	K45KM-D	BEND OR	195.6	LIC	BLDTL	-20080908ABQ
45	K45KM-D	BEND OR	195.6	CP	BPDTL	-20090722AAL
45	K45CV	CORVALLIS OR	114.3	LIC	BLTT	-19930604IG
45	KNMT	PORTLAND OR	1.2	LIC	BLCDT	-20060619AAM
46	K46AM	BAKER, ETC. OR	403.1	LIC	BLTT	-19810121LB
46	K46AS	COOS BAY OR	260.9	LIC	BLTT	-19980911JB
46	K46IP-D	COTTAGE GROVE OR	195.3	LIC	BLDTT	-20090330AAN
46	K46IP-D	COTTAGE GROVE OR	195.4	CP	BDISTT	-20051122AGB
46	NEW	EUGENE OR	171.5	APP	BNPDTL	-20090825AXF
46	K46CH	GOLD HILL OR	344.6	LIC	BLTT	-19890525II
46	K46CU	HEPPNER, ETC. OR	172.7	LIC	BLTT	-19980803JI
46	K46AK	PRINEVILLE, ETC. OR	185.4	LIC	BLTT	-19931105JI
46	K53CU	ROSEBURG OR	262.1	APP	BSTA	-20090805ACN
46	K53CU	ROSEBURG OR	262.1	APP	BDISDTT	-20090826ACI
46	K53CU	ROSEBURG OR	262.1	APP	BDISTT	-20090501APM
46	KUMN-LD	MOSES LAKE, ETC. WA	283.9	CP	BDCCDTL	-20061030AGL
46	KUSE-LD	SEATTLE WA	228.2	CP MOD	BMPDTL	-20090428AAA
46	K46FL	WALLA WALLA WA	350.0	CP	BDFCDTT	-20090728AEN
46	K46FL	WALLA WALLA WA	350.0	LIC	BLTT	-20020211AAA
46	NEW	WENATCHEE WA	281.3	APP	BNPDTL	-20090825ALA
46	NEW	YAKIMA WA	207.1	APP	BNPDTL	-20090827ABB
46	NEW	YAKIMA WA	209.2	APP	BNPDTL	-20090825BIL
47	NEW	BEND OR	204.3	APP	BNPTTL	-20000830AIW
47	NEW	BEND OR	204.3	APP	BNPTTL	-20000830ASA
47	NEW	BEND OR	195.6	APP	BNPTTL	-20000810AAY
47	NEW	BEND OR	195.4	APP	BNPTTL	-20000807AEH
47	K47AV	COTTAGE GROVE OR	195.3	CP	BDFCDTT	-20081003AEI
47	K47AV	COTTAGE GROVE OR	195.4	LIC	BLTT	-19860113IE
47	KUNP-LP	PORTLAND OR	0.3	LIC	BLTTL	-20060809ABC
47	K52AK	PRINEVILLE OR	185.4	CP	BDISTT	-20061212ABI
47	K47JJ	RAINIER OR	71.6	CP MOD	BMPTT	-20070227AEF
47	K47CD	ROCKAWAY OR	96.0	LIC	BLTT	-20030610AAF
47	KCST-LP	HOQUIAM WA	198.1	LIC	BLTTL	-20090330AIY
47	NEW	YAKIMA WA	205.1	APP	BNPDTL	-20090825AMW
48	K48KC-D	COTTAGE GROVE OR	195.4	CP	BDISTT	-20051122AGZ
48	K48GC	FLORENCE OR	203.3	LIC	BLTTA	-20020701AAI
48	K48BL	TERREBONNE-BEND, ETC OR	178.4	LIC	BLTTA	-20010711ABF
49	KAMK-LP	EUGENE OR	171.4	CP	BDISTTL	-20051230AAL
49	NEW	WARM SPRINGS OR	132.4	APP	BNPTTL	-20000831BPV
49	K49IX-D	PUYALLUP WA	187.2	CP	BDISTTL	-20051221AJD
49	K49GF	YAKIMA, ETC. WA	206.8	LIC	BLTTL	-20040616AAK
50	K42IR	ASTORIA OR	123.0	CP	BNPTTL	-20000829ARO
50	K50CT	COTTAGE GROVE OR	195.4	LIC	BLTT	-19920818JE
50	K50CE	HOOD RIVER OR	93.9	LIC	BLTT	-19880603IK
50	K50CE	HOOD RIVER OR	94.0	CP	BPTT	-20070822AAV

II. NIER Study

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal. The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(mW / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (256 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.06 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Dielectric TFU-24GBH-R O6 antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 54 Watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power

density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be $0.03 \mu\text{W}/\text{cm}^2$, which is less than 0.1% of $443 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 46 frequency).

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

September 22, 2009

Erik C. Swanson, P.E.